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2866

OR-655 (6-63)

United States
Atomic Energy Commission
OAK RIDGE OPERATIONS OFFICE

COVER SHEET AND ROUTE SLIP FOR SECRET AND CONFIDENTIAL INFORMATION

This form replaces AEC-94. It covers Secret and Confidential documents while in use whenever Forms OR-519 and AEC-126 are not required.

	TO	INITIALS	DATE
1	V. Parker		12-28
2	Keller		
3	Long	[illegible]	[illegible]
4	Marshall	[illegible]	1/5/66
5	[illegible]	[illegible]	[illegible]
6	[illegible]	B	[illegible]
7		[illegible]	[illegible]

REMARKS:

[illegible] 2/2/66

ChemRisk Document No. 2866

FROM

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UNION CARBIDE NUCLEAR COMPANY • DIVISION OF UNION CARBIDE CORPORATION

DECLASSIFICATION RECOMMENDED
Leon E. Keyes EASI
Name (ADC) - Organization
3-28-96
Date

POST OFFICE BOX Y, OAK RIDGE, TENNESSEE

December 27, 1965

DECLASSIFICATION AUTHORIZED
GABRIEL MARCIANTE, ORO CLASSIFICATION OFFICER
NAME (ADD) - ORGANIZATION
3/29/96
DATE

United States Atomic Energy Commission
Post Office Box E
Oak Ridge, Tennessee

Attention: Mr. C. A. Keller

Diversion of Product Level Uranium to Holding Pond

Gentlemen:

There was a diversion of 1525 grams of product level uranium to our holding pond S-3 in Y-12 during the twenty-four hour period ending at 11:00 p.m. on December 2, 1965, in the evaporator condensate from the general salvage evaporators in C-1 Wing, Building 9212.

These evaporators were installed in early 1964 and were put in regular service in May. During the shakedown period, the condensate from the machine was sampled at intervals of about one hour for a considerable period, with results of about one to two ppm U, amounting to a daily discard of one to two grams. The machine showed remarkably stable operating characteristics. The feed to the machines (two, with a common sampling and disposition arrangement) consists of solutions; such as, mop water, caustic fusion effluents, decontamination solutions, and secondary extraction effluents.

Before the incident, our operating conditions included withdrawal of product up to maximum specific gravity of 1.38, and sampling of a twenty-four hour composite. Three samples were taken, one sent to the B-1 control laboratory, one sent to the plant laboratory at Building 9995 for accountability, and one retained.

At the end of the operating day of December 2;i.e., on the 11 - 7 shift of December 3, the twenty-four hour composite samples were taken as usual. The B-1 laboratory result was found to be 200 ppm (this is a control type fluorometric analysis) and upon being reported to the operating supervision, the evaporator was shut down at 1:30 a.m. The 8 - 4:30 shift inspected the equipment and decided to start the unit up, holding the condensate for examination. Succeeding samples showed twenty, eight and three ppm and the evaporator was placed back in regular operation.

Matls 8-3

~~RESTRICTED DATA~~

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Unfortunately, emphasis was not placed on checking the 9995 sample immediately and the results were not received by the operating group until December 15 at which time a value of 756 ppm was reported. This value was a colorometric analysis. The retain sample was immediately submitted for examination, and the fluorometric result substantiated the first result. The retain and original samples were cloudy when closely examined and the solid portions assayed > 10% U, with the remaining clear liquid still reflecting the high value.

On reviewing the maintenance history of the evaporator, a major overhaul job was done on November 23, 1965, when a calandria was replaced because of poor heat transfer. In our study to attempt to understand the reason for the apparent malfunction, it became obvious that the overflow vent from the feed was not properly connected. It was connected to tank 501, as shown in the attached sketch, with a shut off valve in the line, which was found closed.

It can be conjectured that in shutting down the evaporator, the steam was shut off but the feed valve was not closed. In such a case, feed would continue and could reach a level as high as the three inch vent where it would overflow to a safe bottle. We have no record of such a height being reached. However, at an elevated level, if the steam was turned on full, the result would be to lift the solution out of the disengaging chambers, through the condenser, and into the condensate.

This condition was immediately corrected by removing the block valve in the vent line and rerouting the overflow to an open safe bottle. Other precautionary measures consist of establishing maximum sp. gr. of product as 1.32, rather than 1.38, and to take drip samples of the condensate for process control analysis three times per shift.

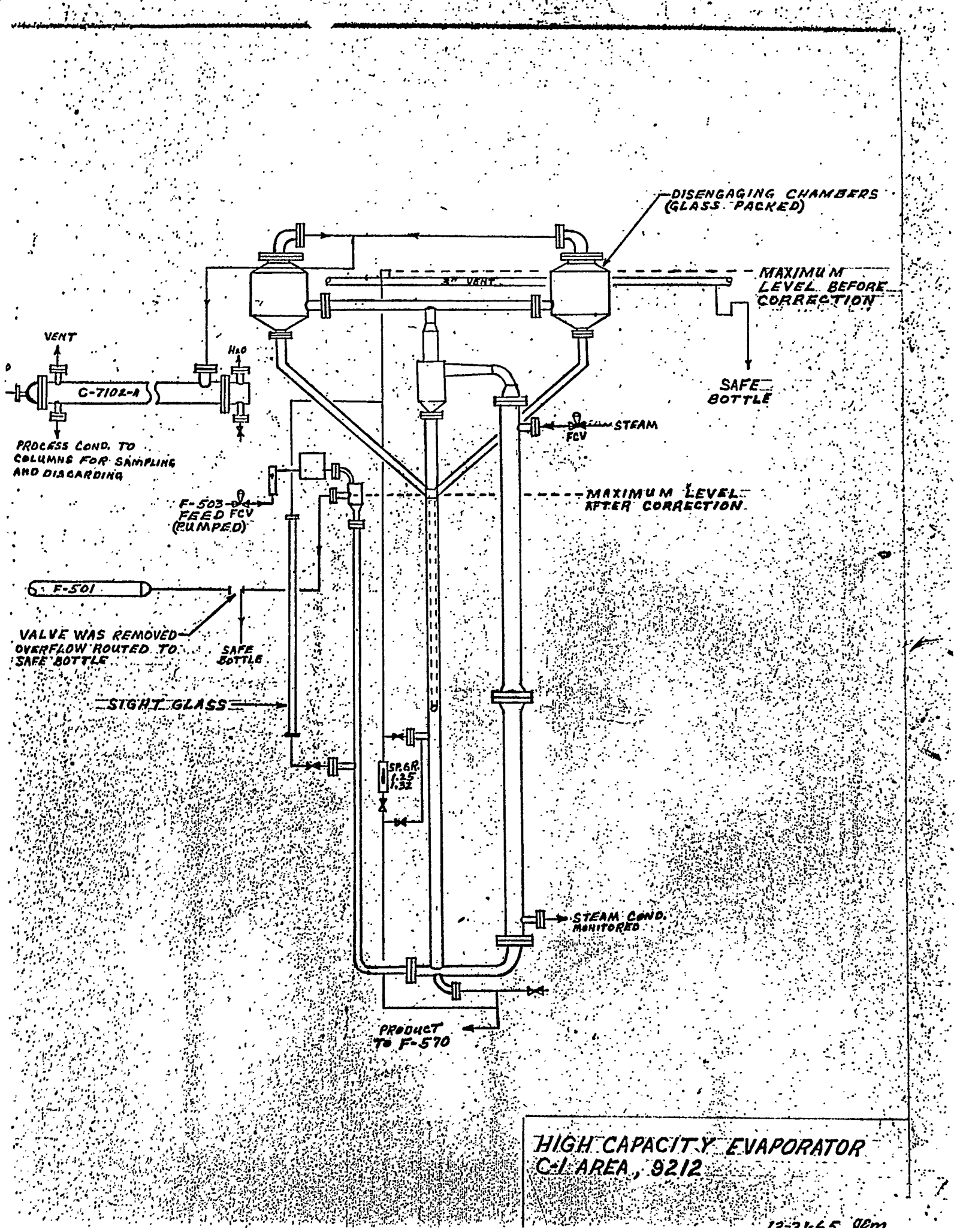
We are of the opinion that these corrective and precautionary measures will prevent repetition of diversion to the holding pond.

Very truly yours,

R. F. Hibbs
Y-12 Plant Superintendent

JSR:bow
Enclosure

C. A. Keller (2)
C. E. Larson
C. E. Center
R. D. Williams
R. F. Hibbs (NoY-12RC)



HIGH CAPACITY EVAPORATOR
C-1 AREA, 9212